

Experiments

with

Camphor

Showing its Effects

on the

Human System

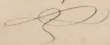
by

James Wilson

of

Maryland

March 29<sup>th</sup> 1810



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As the natural history of Camphor, is at present so well ascertained, and so eminently and satisfactorily delivered by Professor Berton in his Lectures on the Materia Medica, I deem it unnecessary for me to engage minutely in the consideration of this subject. I shall however observe, that it is obtained from a species of Laurel, which grows in China, Japan, Sumatra and other parts of the East Indies.

The Camphor Tree, grows to a considerable size, and the Camphor is found in Crystallized Flakes, situated perpendicularly, between the cortical and ligneous parts of the Tree. Besides these Flakes, the Tree contains other portions of Camphor, which is obtained by further processes; which have received different names, corresponding to different parts of the human body, according to its different degree of value or purity. The Camphor Tree also contains an oil, which is not inferior in quality, to the Crystallized part. The article is imported in its crude state, from China and Batavia, by the American Merchants, and it is refined or purified by us, by a chemical process, called Sublimation. Camphor may also be obtained by distillation, from Thymus, Sage and Lassafras: This last mentioned article contains an oil, which is nearly allied to Camphor.

The late Professor of Chemistry obtained this article, and

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house solution of Chaptal's Chemistry) artificially, by passing a current of Muriatic acid gas, through, Spont. Turpentine. When obtained in this way, the Professor observes, it differs from the Laurel Camphor in its taste, which is not so bitter, in its odour, which is not so penetrating; and in the effects produced on it by the Nitric and acetic acids, the first of which, dissolve it by a reciprocal decomposition, the latter, not at all, while both dissolve Camphor rapidly.

Having given a brief detail of the history of this article, which I considered all, and probably, is more, than was really necessary; I proceed to the immediate object of my Dissertation: in which I design to consider the effects of produced by Camphor on the Human system.

A correct knowledge of the nature of this article, is certainly necessary, in order to apply it with success to the purposes of Practice. This knowledge however, I am far from promising; for a complete elucidation of its nature, I do not aspire at; being fully apprised of the abilities the subject has commanded; my only object being in complying with the regulations of this University, to relate with correctness a few experiments, which I hope were made with accuracy, and without being prejudiced by preconceived opinions.

Perhaps I have been too general in the title of my Thesis, and it might have been more proper for me to have been more limited, and only to have considered its effects on the

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pulse, on which, it is true, it did manifest itself principally; but as other effects were produced, I concluded it my business to relate them. First, I have not increased the quantity of the article, to that degree, which was necessary to produce many of those alarming effects, such as, delirium and convulsions, which it will produce if taken in doses sufficiently large, but I have gone so far as to be convinced, that all those effects, would have been produced, had I have continued to have increased the dose of the article. Such effects, I thought too serious to trifle with, and supposed that as accurate a knowledge of its nature, might be determined, with as much precision, by confining myself to small ~~and~~ <sup>and</sup> ~~small~~ <sup>smaller</sup> doses. For instance; if it be positively ascertained, that in doses of twenty grains it produces effects, equal in violence, only by one half, to those related to be produced by, ~~then~~ <sup>thirty</sup> grains of the article, we may from the safest and most analogy conclude, that in equal quantities, it would produce effects equal in degree. Dr Cullen has reduced the point of controversy on this subject to one single question, viz. Whether is Camphor a cooling or a heating medicine, as it respects the human body? or in other words; whether be it a sedative or stimulant effect? Both sides of this Question, have had their advocates, and many; the arguments deduced and experiments made, to establish their respective opinions.

That opinion which supposed it to be of a sedative or cooling nature, was adopted by the Physicians of the 17<sup>th</sup> century

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of which respectable number, I shall only mention Dr. Cullen; who supposes, it to be of a highly sedative and cooling nature and all together unconnected with the least stimulant effect. Dr. Cullen in his history of this article remarks, that its operation on the nerves of the Stomach, and by those on the rest of the system, and this operation he observes, is entirely <sup>the</sup> of a sedative power.

I <sup>do</sup> not my intention to enter into the *modus operandi* of this article, and I have only quoted the above sentence to show, his belief in its direct sedative effect. To this I will observe, that it might be supposed that, the very name of Cullen, would be sufficient to sanction the notion of its sedative power; but in my opinion, the Classification of this article, with others, such as, Opium and Alcohol, articles which are known to be the most powerful Stimulants: should be considered as a sufficient reputation of this doctrine.

The effects produced by Opium and Alcohol are considerably allied, to those produced by Camphor, <sup>and they are,</sup> as already mentioned unquestionably Stimulants. Moreover I do not consider the effects which are admitted to be produced by Camphor as indicative of a sedative power in the article, <sup>but</sup> <sup>on the contrary</sup> it must prove it to be certainly possessed of a stimulating effect. Dr. Cullen next notices the effect of this medicine, on the sanguiferous system, the consideration of which is more to my purpose. Thus the Professor is equally decisive in favour of its sedative effect, and observes, that here, at least we can assert, that it

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which form constitute the remaining part of my subject.

I am moreover inclined to believe in its stimulating nature from the appearance of inflammation in the Transit Stomach & Intestinal Canal, as exhibited on the dissection of those persons who have laboured under the disease.

As to its stimulating effect, also, which I form the power of the article in producing a transition of the disease; in instance, the translation of a disease from one part to another, from the extremities, to the same or more to the interior, & the contrary, by topical applications, to the affected part. The translation of the disease from one part to another, consisting in making a part artificially, weak, so that it breaks out, the disease, takes its natural course, as this article helps the sedative power, which has been attributed to it; in kind of causing the disease to descend <sup>primarily</sup> the part selected, it would have the most sensible effect, and confine the disease to the part already affected.

I have now proceed to relate a few of my experiments, which I am far from considering as well known to the full particulars & all others, as that being recited, as I imagine, however. Persons may be affected in different ways, by the same medicine, & even the same person may be affected differently, at different times according to the existing airing state of the System. With respect to the impure & incomplete have been before made and often repeated, and attended with effects, in some instances consolidation or inflammation in others

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an opposition to them: yet still I have not the opinion of  
 them will not be considered as a labor, effect, or success  
 to the experiments, were considered as an impossible making  
 the article in different doses, and at different periods of the  
 day, and in different form. But I might have been that  
 is exceptionable, I prevailed on a very good friend to assist  
 me, by taking the article from them the opposite to the sim-  
 ilar, a while, I hear from the doctor of the medicine again  
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 being in the habit of using either of them is considered that  
 a course affected by the most licentious treatment.

Having made those preliminary observations, I am now  
 with the detail of practice and trial of my experiments.

### Experiment 1.

In this instance of chloric attack at one o'clock  
 took fifteen grains of chloric acid - and found it  
 very well bearing seventy two to three hundred grains  
 ascertained by this test to the full degree. It was also  
 natural in other respects. It affected me in the  
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The medicine was not detained in my mouth for any time and produced no obvious change in its temperature. In about eight minutes after the medicine was taken, I experienced some degree of heat at stomach, which continued to increase for a few minutes and then subsided. In about fifteen minutes time my face became paler and bloated, which continued some time and then returned to its natural standard. In twenty minutes my head was sensibly affected with giddiness and confusion. At thirty minutes my face was somewhat <sup>more</sup> above forty or fifty minutes my forehead became warm and moist and about this time, the superficial vessels began to subside and in a short time totally disappeared.

Sept. 27. 1866. L. II.

On the same day at thirty minutes past eight o'clock at night; I took twenty grains of camphor in the formula as the preceding dose being forty, as the beats in the minute by three observations with the Pulsi Glaf. also weak and soft. I reported the pulse infrequency as I shall relate in the table.

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Pulse beat. 71. 72. <sup>75</sup> 78. <sup>74</sup> 77. 78. 78. 78. 78. 78  
My Pulse was occasionally 60 minutes after then, it did not descend below the natural standard. The medicine

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produced a considerable heat at a much earlier time than the previous experiment. In violence the perspiration started at the same time. In the present experiment my pulse was considerably increased in force and frequency; which continued as more than one hour after it was taken. My skin was attracted both to the sun & to the water, as related in the preceding experiments; indeed, only in violence. This expectation is, as I have mentioned before, a considerable one, and it had not previously actually been noticed to have it any great power.

### Exp. 17. 1. 1. 1. III.

On the 17th at ten minutes past seven, when the morning star is visible, from Capri & Capriphor in the same formula. My pulse beating 145 times in the minute. From the same number it varied with the pulse rate also being reduced in other acts. My pulse was affected in the following manner.

Exp. 17. 1. 1. 1. III. 5. 10. 15. 20. 25. 30. 35. 40. 50. Minutes

Exp. 17. 1. 1. 1. III. 58. 75. 90. 100. 110. 120. 130. 140. 150. 160. 170. 180. 190. 200. 210. 220. 230. 240. 250. 260. 270. 280. 290. 300. 310. 320. 330. 340. 350. 360. 370. 380. 390. 400. 410. 420. 430. 440. 450. 460. 470. 480. 490. 500. 510. 520. 530. 540. 550. 560. 570. 580. 590. 600. 610. 620. 630. 640. 650. 660. 670. 680. 690. 700. 710. 720. 730. 740. 750. 760. 770. 780. 790. 800. 810. 820. 830. 840. 850. 860. 870. 880. 890. 900. 910. 920. 930. 940. 950. 960. 970. 980. 990. 1000. 1010. 1020. 1030. 1040. 1050. 1060. 1070. 1080. 1090. 1100. 1110. 1120. 1130. 1140. 1150. 1160. 1170. 1180. 1190. 1200. 1210. 1220. 1230. 1240. 1250. 1260. 1270. 1280. 1290. 1300. 1310. 1320. 1330. 1340. 1350. 1360. 1370. 1380. 1390. 1400. 1410. 1420. 1430. 1440. 1450. 1460. 1470. 1480. 1490. 1500. 1510. 1520. 1530. 1540. 1550. 1560. 1570. 1580. 1590. 1600. 1610. 1620. 1630. 1640. 1650. 1660. 1670. 1680. 1690. 1700. 1710. 1720. 1730. 1740. 1750. 1760. 1770. 1780. 1790. 1800. 1810. 1820. 1830. 1840. 1850. 1860. 1870. 1880. 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When, however, some time after the first experiment, it was found that the pulse was increased in frequency as in the experiments already related. In fifteen or twenty minutes my head became

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affected with the same symptoms and in some cases can considerably  
continue to be affected the whole afternoon, in some degree.  
This afternoon my head was also affected with a dull heavy  
pain.

and I have related three experiments, in which the medicine  
has <sup>been used</sup> a stimulating effect, when exhibited in the  
manner above mentioned. I now wished to ascertain if the  
effect would be similar when given in Bolus, so as to pre-  
sent its action, by its volatility as much as possible.

#### EXPERIMENT IV.

In the twenty first, at thirty minutes past twelve o'clock,  
I took thirty grains of camphor, made into Bolus, as  
I am doing, & after waiting for 15 minutes the minute  
Pulse was affected absolutely as related in the preceding  
case.

Ans. . . . 5. 10. 15. 20. 25. 30. 35. 40. 45. 50 Minutes  
Pulse beat 69. 68. 70. 75. 71. 68. 65. 64. 64. 64. throes  
My Pulse remained at eight & one, when examined some  
time after the expiration of one hour. About ten minutes  
after when, it produced considerable heat at Stomach.  
My Pulse in ten or twelve minutes was considerably increased  
in quickness and tension. In about the same period my  
head became affected with vertigo and confusion of vision  
respiration increased & rapidly and rising with 22 or 23 respirations

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the article on its introduction into the stomach, being  
expected to cause vomiting and at this moment being operative  
produces of course its abortive effect. In ten min-  
utes my Pulse became full and tense, which continued for  
a considerable time, and then became natural. In about  
forty minutes after the article was taken, my head was  
affected with giddiness &c. The symptoms speedily were  
increased attended with pain in the head. Flushing of the face;  
until a high state of intoxication was induced; this con-  
tinued for two hours, and terminated in an irresistible dis-  
position to sleep, which became so excessive that I was  
under the necessity of indulging it at an early hour. On  
rising next morning, and examining my Pulse, I found the  
inflammation considerably increased, my head being still  
affected with dullness, heaviness and confusion, which con-  
tinued all day. The inflammation &c. was by rest and ab-  
stinence diet soon dissipated.

These experiments I think tend in some measure to prove  
its stimulant effect. They were all created; and as the  
effects were similar, it would be unnecessary to transcribe them. I also experimented with the  
article in smaller doses, in the first instance; which pro-  
duced effects proportioned to the quantity taken; but though  
thought it unnecessary to state, mentioning only, those  
experiments, in which it was taken in sufficient quantity.

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"On the 1st  
of May, I  
to the anti-  
slavery society  
in New York  
city. Since  
the war,  
I have

to produce similar effects.

I cannot but write from the result of this experiment being so analogous to the effect produced by a violent irritant that the irritation must necessarily be a stimulant and nearly resembling the action of its stimulant material. In this I share, <sup>fully</sup> that I must say that it was not convenient for me to station a thermometer to determine whether the temperature of my body was sensibly increased or not.

I placed some red wax in my nose & in each ear made with a view to determine whether the irritative particles from above, would produce the same effect as the article when taken in substance.

Sept 14. M. R. T. 17.

In the forenoon, I determined to hold the same experiment, and to exclude all causes external to my nose, closed my nostrils and then applied my mouth to the article for the purpose of two minutes. My pulse beating fervent & throbbing in the nostrils and being not in other respects. I suspect as with a wax were nearly similar to those produced by the internal use of the article. My pulse was examined from the moment the article was taken up & was effected as follows.

Sept. 14. 3. P. 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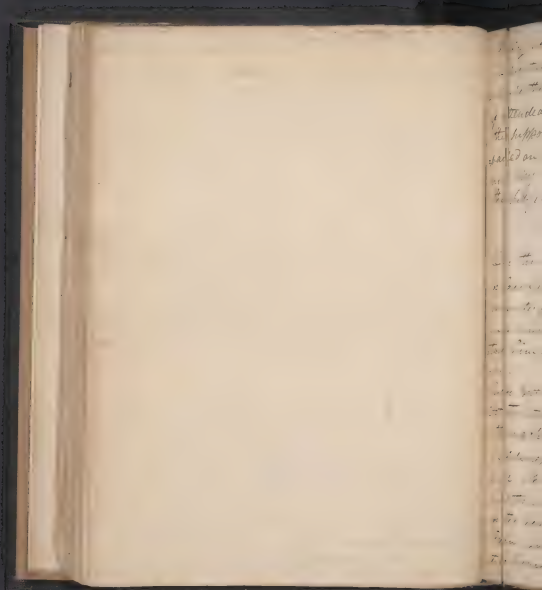
My bill continued at this when examined for a considerable time afterwards. In this case, ~~was~~ when taken into the valley the pulse was a second in fullness, but the same power. It continued for two or fifteen minutes, as is then we are to believe, and the pulse became natural. The heart was slightly affected. The instance reported and the result the same.

Sc. 2. *imbricatus*.

It is more easy in the latter case, owing to the more direct  
communication of experience in the agent of the subject. However, the  
communication is more direct in the latter case, and the subject is more  
likely to be affected by the communication. The communication is more  
direct in the latter case, and the subject is more likely to be affected by  
the communication. The communication is more direct in the latter case,  
and the subject is more likely to be affected by the communication.

*P. m. lat* 7.8.81. no. 4. no. 1. no. 1. no. 1.

At this my Pulse remained stationary. In the meantime my Pulse became full and my head affected with vertigo and giddiness and increased so greatly as to oblige me to desist from travelling the article. An affection of my head and vertigo of my Pulse, was only momentary and in the course of four or five minutes became natural. This was repeated and the effect the same.



Having now ascertained its stimulant effect on myself, I  
in importance and in nature. I next wished to see, what  
would be the effect produced by it on other persons. This I have  
is attended with various parts, would greatly contribute to  
the support of its stimulant nature. For this purpose Albe  
mailed on a few of our friends to assist me on the occasion,  
and My Friend Mr. A. was obliging as to consent to be  
the subject of the following experiment.

### Experiment VIII.

On the twentieth of the Month Mr. A. took twenty grains  
of Sarsaparilla mixed with water. It was given at intervals  
of ten minutes for twelve hours. The first dose was given  
in five minutes, and being also natural in other respects. The effect  
was as follows. First on the Pulse.

5. 10. 15. 20. 25. 30. 35 minutes  
Pulse Beat 83. 86. 88. 87. 85. 82. 80 - faster

At this it remained. It produced a burning sensation in the  
stomach. In ten minutes he became affected with  
sickness and confusion. The Pulse became tense and  
full, which continued so, for upwards of thirty minutes  
in the same state. The effect  
of the head, became increased, attended with Throbbing  
Pain and Flushing of the Face, which continued for  
two hours and then went off. <sup>the day</sup> ~~the~~ became unable to

*[Faint handwritten notes]*

1. 1/2 lb.  
 2. 1/2 lb.  
 3. 1/2 lb.  
 4. 1/2 lb.  
 5. 1/2 lb.  
 6. 1/2 lb.  
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 8. 1/2 lb.  
 9. 1/2 lb.  
 10. 1/2 lb.

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the eye, and in the forehead. The increased fulness  
and tension of the eye, continued for some time after re-  
turning to its natural state. The head was affected with  
a dullness, accompanied by a dull, disagreeable pain which con-  
tinued all the afternoon.

### EXPERIMENT X.

On the twenty-fourth, at seven o'clock, at my request  
took fifteen grains of camphor. The pulse beating  
sixty-eight times in a minute. Expects the operation  
went on the pulse.

C. . . . . 5 . 10 . 25 . 36 . 35 . 30 after 10

Pulse beat 71 . 74 . 77 . 75 . 72 . 68 . 30 . 68 times

At first, with the eye remained in about three minutes  
the pulse became, all and relaxed, which continued for the  
five or forty minutes and then gradually return to its  
natural standard. The head became affected in fifteen  
minutes, after the medicine was taken, with giddiness, &c.  
these effects continued for more than an hour, and then  
disappeared. This was repeated with similar results.

### EXPERIMENT XI.

On the afternoon of the above last, at seven o'clock, at my request  
took twenty grains of camphor for my purpose. The pulse  
beating at first it was, at sixty-eight times in the

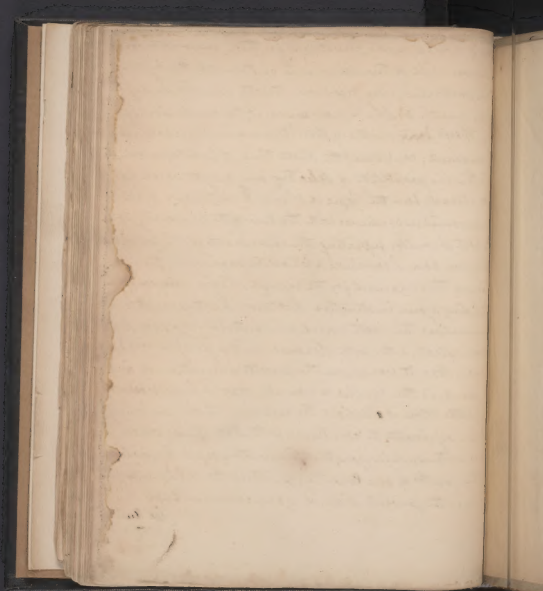
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would not be made <sup>with</sup> correctness; for those circumstances  
exercises will of themselves excite or stimulate the system;  
those particulars, were also more strictly observed, during the  
experiments. As I have now arrived at the conclusion of  
my Thesis, I ~~now~~ must beg, that its many imperfections may  
be pardoned; considering the short time, I had to prepare it  
and the impossibility of selecting any subject which has  
not already been the Topic of many Dissertations. I have  
endeavoured in obedience with the rules of the University, to do  
the best I could; repeating the experiments of my predecessors.  
Nor can I conclude without expressing my thanks,  
through this Channel for the benefit, I have received from  
attending your instructive Lectures; Lectures, replete with  
information, the most useful and entertaining. Nor shall  
I ever reflect, but, with pleasure, and a grateful remem-  
brance, that it was under the private education of one  
of you; and the impulse of you all, that I have received  
my little store of Medical Knowledge. That you may  
all enjoy health, to continue with that Zeal, which I  
have witnessed in you, to disseminate useful knowledge  
to the Youth of our Country; and to be the ornaments of the  
same, is the fervent wish, of your common Pupils.

The Author  



Vsn.

*Cicuta maculata*

Marcus C. Beck

1812-